ATOMIC ENERGY

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS, INC., 509 FIFTH AVENUE, NEW YORK 17, N. Y.

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Dear Sir:

An appropriation request for $3,341,000,000.00 for the United States Atomic Energy Commission, for the fiscal year 1953, which begins this July 1st, has been transmitted to Congress by President Truman. About $650 million of this sum will actually be spent in fiscal 1953; the balance will be obligated in contracts which the USAEC is ready to sign, while the sum of $50 million of this total will be for the Tennessee Valley Authority. TVA will use the funds for further increasing its electric energy capacity, for the USAEC's new plants at Paducah, Ky., and in the Ohio River Valley. President Truman's letter accompanying the budget request explained that an expansion of the United States' atomic energy program had been underway for some time. He pointed out that it was made necessary by the fact that the Soviet Union had shown no inclination to cooperate in an international program for control and regulation of armaments.

Initial trial operation of Brookhaven National Laboratory's cosmotron last week produced protons with an energy of 1.3 Bev, three times the output of the most powerful cyclotron. Actually, the design of the cosmotron anticipates production of protons with energies of 2.5 Bev, when it is utilized to the fullest extent of its capacity. The cosmotron will be used at Brookhaven, the northeastern center for nulcear research and development, Upton, L.I., for work in the physical sciences.

The construction of three new atomic piles is contemplated by the British government it has now been learned. It is expected that at least one of these will be of the heavy water type. Another is the prototype marine propulsion unit, some parts of which have already been manufactured. A third is likely to be a breeder reactor, intended to generate electricity through an intermediate steam turbine, while at the same time creating further nuclear fuel from inactive uranium in a surrounding "blanket".

The American Society of Mechanical Engineers, meeting in Cincinnati, Ohio, this June 15-19, will have, among the papers to be presented, two which touch on the field of atomic energy. "Metals and Metal Processing in the Atomic Energy Field", will be discussed by Alan U. Seybolt, General Electric Co., in the session devoted to metals engineering. In the production engineering field, E. J. Krabacher, M. E. Merchant, and Hans Ernst, Cincinnati Milling Machine Co., will discuss "Radioactive Cutting Tools for Rapid Tool Life Testing".

The practical peacetime use of atomic energy is only a year or two away, U.S. Senator George W. Malone, of Nevada, has now predicted. Senator Malone, the only registered engineer in the Senate, explained that where power from presently available sources is now prohibitively expensive, atomic power will become feasible. Malone believes that engineers dealing with power stand a good chance of being made "obsolete" in the reasonably near future because of atomic power. He feels, further, that atomic energy can save industry billions of dollars annually in transportation costs, terminal facilities, and the like.

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INDUSTRIAL ATOMIC ACTIVITIES...

NEW CONTRACT LET:- Zirconium and hafnium metal will be produced for USAEC purposes by Carborundum Metals Co., Inc. (subsidiary of Carborundum Co., Niagara Falls, N.Y.) under a contract recently awarded that firm by the USAEC. The contract provides for the sale of approximately 150,000 pounds of zirconium and hafnium sponge metal each year, for a period of 5-years, at a unit price of less than $15 per pound. The Carborundum Metals Company will design, build and operate its own production facilities. The USAEC's present requirements for zirconium and hafnium are being met by pilot plant production in government-owned facilities at Oak Ridge, Tenn., where the raw material is purified, and Albany, Oregon, where purified zirconium oxide is converted into metal. This contract is a step in the USAEC's program to encourage private enterprise, using private capital, to take over portions of the USAEC's work which can be handled on a conventional business basis. (Zirconium is a metal useful in the construction of nuclear reactors. Its desirable properties are its corrosion resistance, ductility, strength, and low rate of absorption of neutrons. It had not been produced on a large scale prior to the time the USAEC began pilot plant operations about 2-years ago. The present process for production of zirconium sponge was developed and placed in pilot plant production by the Bureau of Mines at its Northwest Electro Developmental Laboratory, Albany, Oregon. The Bureau of Mines was encouraged in this work by the Navy's Bureau of Ships and the USAEC because of their long-range interests in zirconium. Both zirconium and hafnium are produced from zircon sands presently obtained from the beaches of Florida.)

LOW COST NUCLEAR REACTOR:- A relatively inexpensive lowpower nuclear reactor, unique in that it is submerged in a "swimming pool" water shield to protect operators from radiation, is now being used for experimental purposes at Oak Ridge, Tenn., where it is in operation. The entire facility was constructed for approximately $250,000.00, exclusive of uranium fuel. Of this amount, the reactor core itself cost only $58,400.00, the rest going for the building and other equipment. The reactor uses fuel elements which had already been designed for the Materials Testing Reactor, the large unit which went into operation at Arco, Idaho, recently. In practice, the reactor has proved an economical and safe producer of radiation for testing of nuclear reactor shields. It has a continuous full load power rating of 10 kilowatts, at which it produces a maximum flux, or neutron density, of approximately 100 billion thermal neutrons per square centimeter per second. Because of its low cost, simplicity, and performance, the reactor might be suitable for schools and other research and training institutions.

INDUSTRIAL & LEGAL PROBLEMS OF ATOMIC ENERGY:- The complete program of the Atomic Energy Institute, June 26-28, at the University of Michigan, Ann Arbor, includes what the Michigan Law Faculty (the sponsoring group) terms "practical down-to-earth" approaches to industrial and legal problems of atomic energy. "Potential Use of Atomic Energy by Private Enterprise" will be discussed by Lawrence R. Hafstad and Paul C. Aebersold, of the USAEC. "Private Capital for Nuclear Power" is to be described by Walker L. Cisler, president of Detroit Edison Company, and Edwin J. Putzell, Jr., secretary of Monsanto Chemical Company. "The Canadian Atomic Energy Program" will be covered by J. Lorne Gray, general manager, Atomic Energy of Canada, Ltd. "The USAEC Contractor and Supplier' is to be discussed by Carroll L. Wilson, president of Climax Uranium Mining Co., and Clark Center, general manager at Oak Ridge for Union Carbide & Carbon Corporation's operations there. "Government Controls over Atomic Energy Utilization" will be explained by Casper W. Ooms, Dawson & Ooms, Chicago. "Control of Private Development of Atomic Energy" will be covered by Bennett Boskey, Volpe & Boskey, Washington, D. C. "Radiation Hazards to Life and Property" is to be discussed by John C. Bugher, deputy director, Division of Biology and Medicine, USAEC. "The Joint Congressional Committee on Atomic Energy-Something New in Government", will be covered by Congressman Henry H. Jackson, member of the Joint Committee. Additionally, a panel session will be held on various problems concerned with atomic energy work, as presented by those attending the forum, with Bennett Boskey acting as moderator.

NEW PRODUCTS, PROCESSES, & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS- Five carbon-14 labeled compounds, three of which are available for the first time to radioisotope users, are now being offered. The three new compounds are ring labeled Cholesterone, Cholesterol, and Testosterone, with specific activities of 5 microcuries per milligram. Also available are methyl iodide and methyl alcohol, in minimum quantities of one millicurie, with specific activities of two millicuries per millimole. --Radioactive Products, Inc., Detroit 26, Mich.

Carbon-14 labeled d-glucose, which is obtainable without special authorization of the USAEC, is now available in 40-milligram units. The compound may be secured directly from stock.--Nuclear Instrument and Chemical Corp., Chicago 10, Ill.

Developed originally to remove radioactive contamination from air exhausted during atomic energy plant operations, a new type of air filter is now offered for general industrial, institutional, and laboratory use. Called the "Ultra-Aire Space Filter", each filter is reported to be tested against fine chemical smoke and is certified to be at least 99.95% efficient against particles as small as 0.3 micron in diameter. Simple in design and construction, the Ultra-Aire filter provides 46,000 sq. in. of filter media in the 1000 CFM size, and is available in air flow sizes of 50, 500 and 1000 CFM. Its effective service life, when protected by a roughing filter, is said to be about 1½-years. Among suggested uses, the filter can eliminate radioactive contamination of photographic film and chemicals, and may prove of utility to film manufacturers and processors. It can also be designed into bomb shelters, to protect against radioactive airborne hazards.--Mine Safety Appliances Co., Pittsburgh 8, Pa.

NOTES:- A radioactivity detector in kit form is being offered the individual who is capable of assembling the apparatus himself. It is sensitive to gamma rays, and medium to high energy betas.--Allied Radio Corp., Chicago 7, Ill.

A one page bulletin listing standardized definitions of 58 of the most commonly used words in the radioactive measurement field has now been compiled. It may be obtained on request.--Radiation Counter Laboratories, Skokie, Ill.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

X-Ray Protection Design, by Harold O. Wyckoff and Lauriston S. Taylor, National Bureau of Standards. Contains primary factual data and basic principles necessary for designing shielded X-ray installations; based on the recommendations of the National Committee on Radiation Protection. Architects and designers of buildings and rooms in which X-rays will be used for fluoroscopy, radiography, or therapy should find this book useful. 36 pages. (Order as NBS Handbook No. 50)--Superintendent of Documents, Washington 25, D.C. (15¢)

Experimental Nucleonics, by Ernest Bleuler and G. J. Goldsmith. A useful text on the subject. 393 pages. Rinehart & Co., New York 16, N.Y. ($6.50)

NOTES:- A study of storage aging characteristics involving several hundred Geiger tubes of BS-1 geometry has recently been conducted over a period of two years by the Naval Research Laboratory of the Office of Naval Research, Washington, D. C. While the majority of the tubes tested were still serviceable Geiger tubes after that storage interval, there were progressive changes in the plateau length and in threshold voltage with storage duration. Several filling procedures were disclosed, each capable of a maximum threshold voltage change of 25-volts or less over a 5-year period of storage.

The following Office of Technical Services publications are obtainable from Photoduplication Service, Library of Congress, Wash., D.C., at prices shown, in microfilm or photostat form, as desired. (1) Maximum Allowable Concentrations of Fission Products in the Air As A Function of Exposure Time and Time After Detonation. A modification of a previous report on this subject. PB-106344; Microfilm, $1.75. Photostat, $2.50. (2) Radioautographic Method for Examining Distribution of Particles in a Cyclotron Beam. A report of work done at NACA. PB-106527; Microfilm, $1.75. Photostat, $2.50. (3) Total Linear Absorption Coefficients of Various Types of Media for Gamma Radiation. A determination of total absorption coefficients of various materials for which no data was available in the literature. PB-106336; Microfilm, $2.25. Photostat, $5.00

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES:- Because of the critical need in the United States for uranium, it has been decided to permit uranium exploration in the Capitol Reef National Monument, Utah. Exploration authorizations are now being issued by the USAEC, P.O. Box 270, Grand Junction, Colo.....The mining and milling of vanadium-uranium ores at mines owned or controlled by the Vanadium Corp. of America has produced encouraging results, Vanadium Corp, says in its annual report. Operations of the firm in this field necessitated substantial enlargement of its milling plant at Durango, Colorado, the firm states. Development work completed to date at the Marysvale, Utah, mine has been especially gratifying, disclosing further extension of mineable high-grade uranium ore, with additional showings of pitch-blende, the firm notes. Properties acquired on lease by Vanadium include 41 mining claims extending over 800 acres in the Long Park area of Montrose county, Colo., obtained from T.C. and Henry Brammeier and associates. So satisfactory has been the progress in development of uranium ore reserves at the Marysvale, Utah, mines, that an option has been taken on a nearby site for location of a milling plant.....The Plateau Mining Company has now taken over the operation of the Yellow Circle uranium property, 12 miles east of Moab, Utah. The new organization now has a crew of 27 men employed, the Yellow Circle operation being one of the most extensive in the Colorado Plateau area. The directors of Plateau Mining are Vance Thornburg, Frank Syemour, and Melvin C. Bowles..... Uranium prospectors in the arid Henry Mountains region of southern Utah, one of the least accessible areas in the United States, may now obtain some help from a new Geological Survey map of the region, which was released last week. Titled "Geologic Map of the Henry Mountains Region, Utah", (number OM-131), copies may be obtained at $1.00 from Geological Survey, Washington 25, D.C.

CANADA:- Eldorado Mining and Refining's diamond drilling on the Bolger-Radiore area is expected to provide a great deal of important information within the next few weeks, J. J. Byrne, president, Radiore Uranium Mines, Ltd., recently told shareholders. The block of ground includes the Bolger section of the Eldorado property and the Ace group of Radiore-Uranium Mines. The most important appears to be the large surface uranium exposure known as the Bolger discovery, which outcrops on Eldorado's portion of the block but shows a decided southerly dip towards Radiore ground. Terms of the deal by which Eldorado undertook to proceed with the exploration of Radiore's Ac group were finalized last December. Since that time, considerable work has been done in line surveying and preparing the large block for drilling. Radiore has had a crew of men at work on the company's Con group, a block comprising 1,800 acres lying on the southwest shore of Beaverlodge Lake. Numerous narrow high grade pitchblende showings were uncovered here in 1949 and 1950. High grade ore is being bagged from two of the showings, several tons of which averaged 4% uranium oxide.....Shareholders of Candoo Metals and Oils, Ltd., were told at the annual meeting in Toronto in the last fortnight that the company is watching developments at the adjoining La Ronge Uranium Mines, Ltd, property before instituting work on its 36 claims at Nistowiak Lake, in the Churchill district, Saskatchewan. La Ronge is drilling a structure which cuts across the Candoo property.

AUSTRALIA:- Optimistic reports concerning uranium mineral deposits have come from two mining fields --Radium Hill, in South Australia, and Rum Jungle, in Northern Territory. It is believed that the Radium Hill deposits have been proved to be worth working on a large scale immediately, and that Rum Jungle deposits are extensive but must yet be explored in depth before deciding the scale on which they should be worked. (Radium Hill uranium deposits were discovered in 1906, but no minerals were extracted. In 1944, the area was examined as a potential producer of uranium, but was still not considered worth working. At the end of World War II, the South Australian Government began to explore the area systematically, and late in 1951 a pilot plant began treating the ore. Principal uranium-bearing mineral is davidite, a complex iron-titanium compound containing minor quantities of chromium, vanadium, and rare earths. Research has shown that a process using heavy-media separation, magnetic separation, and probably flotation, will give high recovery of uranium in concentrates. These will be treated chemically at a plant to be built at Fort Pirie, and this plant will produce uranium oxide for export. Rum Jungle uranium deposit was found in 1949, and is being explored by the Commonwealth Government.)

ATOMIC PATENT DIGEST...latest U. S. grants and applications...

Fluorinated compounds and process of producing them. In part, the method of making a perfluorinated oil suitable for use as a lubricant, which comprises subjecting to substitutive and additive fluorination a polyalkyl condensation product of a 2 to 4 carbon atom alkyl group with a dinuclear aromatic hydrocarbon. U. S. Pat. No. 2,596,084 issued May 6, 1952; assigned to United States of America (USAEC).

Vibration measuring device. Three patents have now been issued on apparatus for measuring small displacements. They comprise U. S. Pat. Nos. 2,596,529; 2,596,530; and 2,596,531 issued May 13, 1952. Assignments were made to United States of America (USAEC).

Pocket radiation alarm. A compact radioactive alarm device, comprising an ionization chamber, a thermionic tube, and a source of potential, in associated circuit. U. S. Pat. No. 2,596,500 issued May 13, 1952; assigned to United States of America (USAEC).

Electronic relay circuit. The combination of means to generate a voltage varying in response to a condition to be controlled, and a trigger circuit, whereby variations in the potential of one of the control grids of one vacuum tube used will be effective to trigger the trigger circuit. U. S. Pat. No. 2,596,956 issued May 13, 1952; assigned to United States of America (USAEC).

Method of extracting uranium from bituminous shales and shale culm containing uranium. Comprises, in part, preparing a suspension of the shale in its natural chemical state in a solution of alkali carbonate, blowing a gas containing free oxygen through said suspension, and then separating the extract from the solid matter. U. S. Pat. No. 2,597,504 issued May 20, 1952; assigned to Frans Georg Liljenroth, Stockholm, Sweden.

Radioactive assay apparatus. The combination of a shielded housing, with associated apparatus whereby radiation may be measured in a convenient and rapid manner. U. S. Pat. No. 2,597,535 issued May 20, 1952; assigned to United States of America (USAEC).

Ionization chamber. Comprises, in part, a container having within it a tubular high-voltage electrode, a rod collecting electrode extending along the axis of the tubular electrode, the container having a removable end wall engaging one end thereof, and the tubular electrode in operative position normally extending upwardly from the removable end wall to form a specimen holder for a tubular specimen contaminated with radioactivity. The specimen surrounds the rod electrode, thereby providing improved chamber geometry. U. S. Pat. No. 2,598,215 issued May 27, 1952; assigned to United States of America (USAEC).

Copolymers of perfluoropropene and tetrafluoroethylene and method of manufacturing transparent sheets of these plastics. Comprises, in part, pressing the solid copolymer into sheets at a temperature between about 300 and about 350 deg. C., and then rapidly cooling these sheets. U. S. Pat. No. 2,598,283 issued May 27, 1952; assigned to United States of America (USAEC).

Rearrangement of saturated halocarbons. In part, the process of rearranging the position of the halogen atoms in a perhalocarbon containing at least two carbon atoms, two fluorine atoms, and two different halogens to produce an isomer. Comprises treating the perhalocarbon at a temperature above its melting point between about 0 deg. C., and about 95 deg. C. for not less than about one hour, and not more than about seven hours, in contact with a catalyst selected from the group consisting of aluminum chloride, aluminum bromide, and their mixtures with antimony halides, and then separating out the structurally different intramolecularly rearranged isomer from the reaction mixture. U. S. Pat. No. 2,598,411 issued May 27, 1952; assigned to United States of America (USAEC).

Sincerely,

The Staff
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